

REMARKS

Claims 1 – 29, 31 – 46, and 48 – 59 are currently pending in the present application. Favorable consideration and allowance of these claims are respectfully requested.

The rejection of claim 20 under 35 U.S.C. § 112 is respectfully traversed. Claim 20 depends from claim 18 which indicates that the aluminum content is less than 18 wt %. Claim 20 adds that the aluminum content is greater than 10 wt %. Thus, claim 20 is directed to a method wherein the aluminum content is between 10 and 18 wt %.

The specification supports the invention as claimed in several places. For instance, paragraphs [0006], [0007], [0011], [0013], [0023], [0027], [0039] all indicate that the aluminum content is less than 18 wt %. Paragraph [0008] recites an aluminum content greater than 10 wt %. Thus, the invention as claimed is described in the specification as originally filed, and a person of skill in the art would understand the present inventors to have had possession of the presently claimed invention as of the filing date of this application. Accordingly, the written description requirement is met and reconsideration and withdrawal of this rejection are therefore respectfully requested.

The rejection of claims 52-59 under 35 U.S.C. § 112 is respectfully traversed. The enablement requirement is satisfied where the specification describes the claimed subject matter in such a way as to enable any person skilled in the art to which it pertains to make and/or use the invention. Thus, enablement is judged in view of the combined teachings of the specification and the knowledge of one skilled in the art.

Paragraphs [0041]-[0044] provide a person of skill in the art with details necessary to practice the claimed invention. Paragraph [0041] clarifies that the diffusion process is performed in successive process steps. In particular, paragraph [0043] describes an aluminum gas-phase coating process using low activity granules. The paragraph also indicates that the coating activity is kept

essentially constant. Based on this disclosure and the knowledge of a person of skill in the art, such a person would be readily able to practice the claimed method.

The U.S. Court of Customs and Patent Appeals has said that “[t]he first paragraph of § 112 requires nothing more than objective enablement. How such a teaching is set forth, either by the use of illustrative examples or by broad terminology, is of no importance.” *In re Marzocchi*, 169 USPQ 367 , 369 (CCPA 1971). The court also added that “it is incumbent upon the Patent Office, whenever a rejection on this basis is made, to explain why it doubts the truth or accuracy of any statement in a supporting disclosure and to back up assertions of its own with acceptable evidence or reasoning which is inconsistent with the contested statement. Otherwise, there would be no need for the applicant to go to the trouble and expense of supporting his presumptively accurate disclosure.” *In re Marzocchi*, 169 USPQ 367 , 370 (CCPA 1971). The court makes clear here that only objective enablement is required. The present record includes no statement or other explanation as to why the truth of the accuracy of statements in the disclosure should be doubted. Moreover, the record does not explain why, in view of the description provided in the specification, a person of skill in the art would not be able to practice the claimed method.

As a result, the claims are properly enabled, and reconsideration and withdrawal of the rejection are respectfully requested.

The rejection of claim 11 under 35 U.S.C. § 112 is respectfully traversed. Claim 11 has been amended to recite “a surface layer” rather than “the surface layer”. Withdrawal of the rejection is respectfully requested.

The rejection of claims 1 – 17 under 35 U.S.C. § 102(b) as anticipated by Murphy (5,716,720) is respectfully traversed.

Claims 1 and 2 recite a component with a platinum-aluminum substrate surface region and the aluminum content in the substrate surface region is less than 18 wt %. The claims clarify that the substrate surface region is “at the

substrate surface.” As a result, any reference where the relevant aluminum-containing region is not “at the substrate surface” does meet the limitations of claims 1 and 2 (or the claims dependent therefrom).

Murphy, on the other hand, recites a thermal barrier coating system with an intermediate phase bond coat, *see, e.g.* the title. In particular, in the “Description of the Invention” Murphy describes a substrate as having “a multi-layered structure comprising a first bond coat layer...a thermally grown alumina layer on the bond coat, and a ceramic thermal barrier layer...on the thermally grown alumina layer.” *See*, col. 3, lines 25 – 33. At col. 3, lines 50 – 59 Murphy indicates that the bond coat layer comprises a chemical vapor deposited, platinum modified diffusion aluminide layer. This diffusion aluminide layer includes an inner diffusion zone and an outer layer region. The outer layer region includes a platinum modified intermediate phase of aluminum and nickel. Col. 4, lines 6–17 clarify that it is this intermediate layer which has an average aluminum concentration of about 18 to about 26 % by weight. As described above, on top of this intermediate layer are provided a thermally grown alumina layer and a ceramic thermal barrier layer. Thus, Murphy does not teach a substrate surface region which is at the substrate surface which also meets the limitations of claims 1 and 2. Instead, Murphy provides an intermediate layer having an aluminum concentration of from about 18 to about 26 % by weight and this intermediate layer is then covered by two further protective layers. As a result, Murphy fails to teach a component with a platinum-aluminum substrate surface region as is set forth in claims 1 and 2.

For this reason the reference fails to teach each and every element of the claimed invention and reconsideration and withdrawal of the rejection are respectfully requested.

The rejection of claims 1 – 3, 8 – 12, 16 – 18 and 22 – 24 as anticipated by any of the Rose patents (U.S. Patent Nos. 5,482,578; 5,492,726; or 5,843,588) is respectfully traversed.

The Office Action cites Rose '578 as teaching that aluminum is applied in a concentration of from 1 to 15 wt %. The relevant portion of the reference, col. 3, lines 47 – 50 discuss the aluminum content of the aluminum source powder used in the diffusion process. There are a whole host of factors which have an effect on the aluminum content of the substrate surface region including, for instance a variety of different diffusion parameters such as the time and temperature of the diffusion process. Accordingly, it does not necessarily follow that starting with an aluminum source powder which is present in an amount between 1 to 15 % by weight will result in an integrated aluminum content in the substrate surface region which is less than 18 % by weight.

None of the Rose patent references recite the actual integrated aluminum content in the substrate surface region as is presently claimed. Instead the references merely refer to the desirable starting materials. As a result, none of the Rose patents teach the presently claimed invention. Because the references fail to teach each and every element of the claimed invention the anticipation rejection cannot be properly maintained and reconsideration and withdrawal thereof are respectfully requested.

The rejection of claims 1 – 4, 8 – 13, 16 – 19 and 22 – 24 as anticipated by Rickerby et al. (EP 0718419) is respectfully traversed. Like the Murphy reference discussed above, Rickerby relates to a multi-layer coating system where the aluminum containing later is underneath two further layers. In particular, and much like the teachings of the Murphy reference, in Rickerby an oxide layer and an outer ceramic insulating layer are provided on top of the aluminum-containing bond coat. As a result, Rickerby fails to teach a component with the requisite platinum-aluminum substrate surface region which is at the substrate surface.

For this reason, the reference fails to teach each and every element of the claimed invention and reconsideration and withdrawal of this rejection are respectfully requested.

The rejection of claims 1 – 4, 8 – 13 and 16 – 17 as anticipated by Sangeeta (6,395,406) is respectfully traversed. This reference teaches the use of various slurries to form a platinum aluminide coating. In particular, the reference describes the aluminum content of the first slurry and platinum content of a second slurry, *see*, col. 3, lines 38 – 40 and col. 4, lines 33 – 34. The reference does not, however, teach a desired metal content of the resulting coating. As a result the reference fails to teach a component with a platinum-aluminum substrate surface region wherein the integrated aluminum content in the substrate surface region is less than 18 wt %, as is presently claimed. As discussed above, the actual aluminum content achieved would vary depending on a number of factors relating to not only the starting materials but also the actual diffusion treatment process itself. As a result, the reference fails to teach each and every element of the claimed invention and the anticipation rejection cannot be properly maintained. Reconsideration and withdrawal thereof are respectfully requested.

The rejection of claims 18 – 24 and 52 – 59 as obvious over Murphy in view of Sangeeta (6,485,780) is respectfully traversed. The Office Action admits that Murphy does not teach diffusion of aluminum subsequent to diffusion of platinum. Moreover, Murphy is directed to achieving a multi-layer component where the platinum aluminum layer is not at the substrate surface as is required of claim 18 and claim 52 and the claims dependent therefrom.

The Office Action offers Sangeeta '780 as teaching diffusion of aluminum subsequent to diffusion of platinum. However, Sangeeta does not make up for the failure of Murphy to teach the substrate surface region having an integrated aluminum content of less than 18 wt % as Murphy provides an intermediate layer which is protected by two further layers. Sangeeta '780, like Sangeeta '406 discloses the use of slurries, however Sangeeta '780 does not appear to indicate the amounts of various metals in the slurries.

With respect to claims 52 – 59 the Office Action indicates that Murphy does not teach the aluminum or platinum content as being essentially constant

in a zone comprising a specific percentage of a bounded region. Thus, the Office Action admits that the reference fails to disclose the presently claimed invention. The Office Action indicates that “Murphy forms like materials in a like matter, in would therefore be expected that the diffusion coating will have the same characteristics claimed.” The premise on which this conclusion is based, however, is wrong. Indeed, the very point here is that Murphy does not form like materials. Accordingly, Murphy cannot employ the same methods as those contemplated by the present inventors. Because Murphy does not teach that the aluminum or platinum content is essentially constant and because Sangeeta ‘780 fails to teach that the aluminum or platinum content is essentially constant, the proposed combination of references fails to teach each and every element of the presently claimed invention. Accordingly, the obviousness rejection cannot be properly maintained and reconsideration and withdrawal thereof are respectfully requested.

The rejection of claims 4 – 7, 13 – 15, 19 – 21, 25 – 29, 31 – 46 and 48 – 59 as obvious over any of the Rose patents (the ‘578, the ‘726, or the ‘588) in view of Murphy is respectfully traversed.

Claims 4-7 depend from claim 2 and recite, among other things, varying platinum and aluminum metal content. Claim 13-15 depend from claim 11 and also recite varying metal content in the coating. Claims 19-21 vary the metal content recited in claim 18. Claims 25-29, 31-46 and 48-59 recite that at least one of the platinum and aluminum content in a zone of the substrate surface region is essentially constant.

The Office Action admits that Rose does not teach percentage of platinum in the platinum group metal layer applied to the substrate. The Office Action also admits that Rose does not teach the aluminum content or platinum content as being essentially constant in a particular zone.

As discussed above, Murphy is directed to an arrangement where an intermediate layer with the requisite range of platinum is protected with two

further layers. This is completely different from the presently claimed arrangement where the substrate surface region is at the substrate surface. Thus, if one were to combine the teachings of Murphy with those of Rose as proposed in the Office Action one would still not arrive at the presently claimed invention.

With regard to claims 25 – 29, 31 – 46 and 48 – 59 the Office Action concludes that Rose forms like materials in a like manner. This conclusion is again based on a faulty premise. Rose does not teach forming like materials and accordingly one of skill in the art would not expect that Rose teaches the same manner of forming these materials as that contemplated by the present inventors. In actual fact Rose contemplates forming different materials and uses a different manner than that contemplated by the inventors of the present application.

For the foregoing reasons the Office Action has failed to lay out a *prima facie* showing of obviousness and the obviousness rejection cannot, therefore, be properly maintained. Reconsideration and withdrawal of this rejection are respectfully requested.

The rejection of claims 5 – 7, 14 – 15, 20 – 21, 25 – 29, 31 – 46 and 48 – 59 as obvious over the proposed combination of Rickerby and any of the Rose patents (the '578, the '726, or the '588) further in view of Murphy is respectfully traversed.

The failure of the proposed combination of any of the Rose patents with Murphy to teach all of the elements of the presently claimed invention is discussed above. Rickerby is also discussed above. In particular, In Rickerby, like the Murphy reference, a multi-layer coating system is provided where the aluminum containing later is underneath two further layers.

As a result, the proposed combination of references does not disclose or suggest a platinum-aluminum substrate surface region which is at the substrate surface, as is presently claimed. Thus, the proposed combination of reference

fails to disclose or suggest each and every claim element and reconsideration and withdrawal of the rejection are respectfully requested.

The rejection of claims 1 – 6, 8 – 17, 18 – 29, 31 – 40, 42 – 46, 48 and 50 – 59 as obvious over Sangeeta '406 in view of Sangeeta '780 is respectfully traversed. The Office Action admits that Sangeeta '406 does not teach diffusion of aluminum subsequent to diffusion of platinum and offers Sangeeta '780 as making up for the deficiency of the primary reference.

However, neither of the references teaches the presently claimed metal content limitations in the substrate surface region. Instead, Sangeeta '406 discusses the metal content of the starting materials (slurries) but not that of the resulting coating. Sangeeta '780 does not appear to address the metal content in the coatings at all.

Accordingly, the proposed combination of references fails to teach each and every element of the claimed invention and the obviousness rejection cannot, therefore, be properly maintained. Reconsideration and withdrawal thereof are respectfully requested.

The rejection of claims 1 – 29, 31 – 46 and 48 – 59 as obvious over Schaeffer (6,066,405) is respectfully traversed.

The Office Action admits that Schaeffer states that the coating contains at least 18 percent aluminum and at least 18 percent platinum. In fact, the reference makes clear to a person of skill in the art that the coating must contain at least 18 percent of these metals. Taken as a whole a person of skill in the art would read this to teach away from any substrate surface region having a metal content of less than 18 percent for either of these metals. Stated another way, the reference actually discourages one of skill in the art from even trying to form a substrate surface region having a metal content of less than 18 percent for platinum or aluminum. Thus, the diffusion coating techniques of Schaeffer would never result in the same coating as is presently claimed, as one of skill in

the art would never lower the platinum and aluminum concentration as necessary to arrive at the presently claimed invention.

The Office Action asserts that one of skill in the art would try to optimize the metal content ranges and arrive at the claimed invention. Given the clear teaching away from the presently claimed metal compositions in the Schaeffer reference, one of skill in the art would not be motivated to “optimize” the metal compositions as necessary to meet the limitations of the present claims. While it may be reasonable to assume that one of skill in the art might optimize some variables within a given range, the cases related to optimization do not stand for the proposition that when a range is provided in some reference, persons of skill in the art will try to optimize the given variable outside of that range. This is especially true in the present instance, where the reference very clearly states the lower useful limit of the metal compositions is above that presently claimed.

Despite that the reference does not disclose each and every limitation of the claimed invention, the Office Action asserts that the reference amounts to a *prima facie* showing of obviousness. This simply cannot be the case where the reference does not disclose or suggest each and every limitation of the present claims. The purported obviousness of the claimed invention over the disclosure of the reference is even less true when one considers the references consistent teachings that the metal content is always higher for platinum and aluminum than that presently claimed.

Still further, Schaeffer provides no indication as to how one might form a region having a constant metal content as is required by the claims.

Accordingly, the obviousness rejection cannot be properly maintained. Reconsideration and withdrawal thereof are respectfully requested.

CONCLUSION

In view of the foregoing, the application is respectfully submitted to be in condition for allowance, and prompt favorable action thereon is earnestly solicited.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket No. 011235.53144US).

Respectfully submitted,

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